Remarks

Claims 1-7, 10 and 14-35 are pending in the application. Claims 1-7, 10, 14 and 32-35 are rejected, and claims 15-31 are withdrawn from consideration. By this paper, claims 1, 10, 14 and 32 are amended, claims 15-31 are canceled, and new claims 36-46 are added. Based on the following, consideration of the amended and new claims, and reconsideration of the remaining claims are requested.

Election/Restrictions

Claims 15-31, previously withdrawn from consideration, are by this paper canceled.

Claim Rejections—35 U.S.C. § 112

The Examiner rejected claims 10 and 14 under 35 U.S.C. § 112, second paragraph, stating that the limitation "the low operating speed range of the powertrain" lacked antecedent basis. By this paper, both claims are amended to use the indefinite article "a" rather than the definite article "the", thereby eliminating the antecedent basis issue. Applicants respectfully request withdrawal of the Section 112 rejections.

Claim Rejections—35 U.S.C. § 102

The Examiner rejected claims 1, 2, 4-7, 10 and 14 under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 6,554,088 (Severinsky et al.). By this paper, claim 1 is amended to more particularly point out and distinctly claim the subject matter of the invention. For example, amended claim 1 recites a powertrain that includes a primary power generating system "having at least one air charge boosting device for increasing the primary drive torque at a first range of operating speeds of the powertrain; and a secondary power generating system having at least one electric torque generating device for generating a secondary drive torque, the secondary power generating system being constructed and arranged such that the secondary drive torque complements the boosted primary drive torque over at least a second operating speed

range of the powertrain that is lower than the first range of operating speeds." No such elements are expressly or inherently described in Severinsky et al.

Severinsky et al. describes a hybrid vehicle, which in one embodiment, may include a turbocharger. The turbocharger is operated "when the road load exceeds 100% of MTO [maximum torque output] for more than a period of time T." (Col. 47, ll.11-14). Conversely, electric traction motors are operated "when the road load only exceeds the engine's maximum power for a short time, less than T ...." (Col. 46, ll. 45-49). Thus, the use of the turbocharger and the electric motors are dependent on a maximum engine load condition over a predetermined time period. This is markedly different from the components as recited in amended claim 1, which are at least partly controlled based on powertrain speed. This type of control, as explained in the specification of the instant application, provides power efficiently—e.g., the electric machine may have good torque characteristics at low speeds, while the air charge boosting device may work most efficiently at higher speeds. No such elements are expressly or inherently described in Severinsky et al., and therefore, Applicants respectfully submit that amended claim 1 is not anticipated by this reference.

Amended claim 1 is the base claim for claims 2, 4-7, 10 and 14. Each of these dependent claims contains all of the limitations of amended claim 1, as well as additional limitations that further distinguish it from the cited reference. Therefore, Applicants submit that each of these dependent claims is also patentable over Severinsky et al.

Claim Rejections—35 U.S.C. § 103

The Examiner rejected claim 3 under 35 U.S.C. § 103(a), as being unpatentable over Severinsky et al. in view of U.S. Patent No. 4,317,439 (Emmerling). The Examiner relies on Emmerling to teach a dual stage intercooling device; however, even the combination of Emmerling and Severinsky et al. fails to teach or suggest all of the claim limitations of amended claim 1, which is the base claim for claim 3. Therefore, Applicants submit that claim 3 is not rendered obvious by the cited combination.

The Examiner rejected claims 32 and 35 under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 5,359,968 (Shiraishi et al.) in view of U.S. Patent No. 4,688,425 (Kanehara et al.). With regard to claim 32, the Examiner states that "Shiraishi teaches a method for sensing and responding to a backfire arising in the intake system of a hydrogen fuelled reciprocating internal combustion engine, comprising the steps of: sensing a backfire (Col. 7, lines 49-50); and shutting off the hydrogen fuel to the engine when a backfire is sensed (Col. 4, lines 51-55). Shiraishi lacks the teaching of sensing the backfire by sensing the temperature within the intake system." The Examiner relies on Kanehara et al to teach that a backfire can be detected by a high temperature.

Claim 32 of the instant application is amended by this paper to more particularly point out and claim the subject matter of the invention. Amended claim 32 recites a method for sensing and responding to a backfire that includes the steps of: "sensing a backfire by sensing the temperature within the intake system; and automatically shutting off the hydrogen fuel to the engine when a backfire is sensed." In contrast, Shiraishi et al. teaches that "when backfiring occurs, an emergency switch is thrown off by the operator to shut down the supply of hydrogen into hydrogen engine 1 ...." Thus, if the operator does not act, the hydrogen supply is not cut off. Not only does Shiraishi et al. fail to teach or suggest the limitations of amended claim 32, but, by teaching a method that requires operator intervention, it teaches away from the automatic shut off method recited in amended claim 32. Therefore, Applicants submit that amended claim 32 is not rendered obvious by the cited combination. Claim 35 depends directly from claim 32, and therefore, is also believed to be allowable over the cited combination.

The Examiner rejected claim 33 under 35 U.S.C. § 103(a), as being unpatentable over Shiraishi et al. in view of Kanehara et al., and further in view of U.S. Patent Application Publication No. 2002/0094908 (Urasawa et al.). The Examiner also rejected claim 34 under 35 U.S.C. § 103(a), as being unpatentable over Shiraishi et al. in view of Kanehara et al., and further in view of U.S. Patent No. 5,317,924 (Maack). Each of claim 33 and 34 depend directly from amended claim 32, and therefore contain all of the limitations of amended claim 32, as well as additional limitations that further distinguish it from the cited combination of references. Applicants submit that neither the addition of Urasawa et al. nor the addition of Maack to the

Shiraishi et al. / Kanehara et al. combination teaches or suggests all of the limitations of amended claim 32. In fact, as noted above, Shiraishi et al. teaches away from the invention as claimed in amended claim 32; therefore, Applicants submit that claims 33 and 34 are patentable over the cited combinations.

New Claims

By this paper, claims 36-46 are added. Claims 36-40 have amended claim 1 as their base claim, and are believed to be allowable. New claim 41 recites elements similar to amended claim 1, particularly with regard to an electric machine and an air charge boosting device controlled at least in part on high and low speed ranges of the powertrain. None of the cited references, alone or in combination, teach or suggest such limitations. Therefore, claim 41 is believed to be allowable. Claim 41 is the base claim for claims 42-46, and therefore, these dependent claims are also believed to be allowable.

Based on the foregoing, allowance of each of the pending claims is requested. Please charge any fees or credit any overpayments as a result of the filing of this paper to Ford Global Technologies, LLC Deposit Account No. 06-1510.

Respectfully submitted,

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